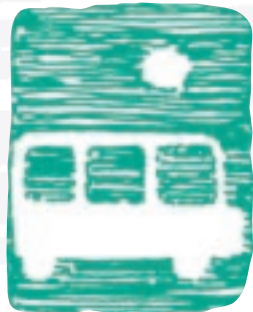




State Implementation Plan Development Guidance:

Using Emission Reductions from Commuter Choice Programs to Meet Clean Air Act Requirements



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**STATE IMPLEMENTATION PLAN DEVELOPMENT
GUIDANCE:
USING EMISSION REDUCTIONS FROM
COMMUTER CHOICE PROGRAMS
TO MEET
CLEAN AIR ACT REQUIREMENTS**

**U.S. Environmental Protection Agency
Office of Air and Radiation
Office of Mobile Sources
Regional and State Programs Division
Transportation and Market Incentives Group
1998**

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Executive Summary

ES-1. Commuter Choice Can Reduce Air Pollution

The vast majority of American workers are offered only one commute benefit: free or substantially subsidized parking at work. Recent changes to the Federal tax treatment of employer-provided commute benefits make it attractive for employers to offer more benefit choices to their employees. Through Commuter Choice programs, employers offer one or a mix of commute benefits alternatives to parking that encourage employees to commute by modes that are less polluting than driving to work, especially driving alone. In particular, Commuter Choice programs can substantially reduce the number of employees that drive alone to work, and increase the number of employees choosing cash or other compensation instead of parking, and using transit, vanpool, and other options. Commuter Choice programs can thus help reduce air pollution, congestion, and other negative environmental effects from commuting.

ES-2. EPA Issues This Guidance to Encourage Commuter Choice

EPA issues this guidance to help states or agencies¹ calculate the emission benefits of Commuter Choice programs and take credit for them in State Implementation Plans (SIPs). However, other entities will find this guidance beneficial as well. For example, public-private partnerships which implement and run a Commuter Choice program should use this basic methodology to evaluate behavior change and program effectiveness. Commuter Choice programs can be implemented as a mandatory measure, an Economic Incentive Program, or as a Voluntary Measure. For each of these options, a different entity may administer and evaluate the Commuter Choice program. In any case, this document should be referenced when calculating the impact of Commuter Choice programs on mode shift and emissions. For example, a Voluntary Measure program may be entirely administered by individual employers. EPA encourages communities and companies to learn about Commuter Choice programs and will work with any area that wants to evaluate the potential of Commuter Choice programs to improve human health and environmental quality.

¹ This document uses "state or agency" to refer to anyone who has authority to submit a State Implementation Plan (SIP), such as a local government, regional transit authority, or regional air quality agency, that takes action to reduce mobile source emissions through a Commuter Choice program.

ES-3. How this Guidance Is Organized

Commuter Choice programs can include any or all of several elements. Chapter 1 describes the many types of Commuter Choice programs. The Commuter Choice concept is not entirely new in air quality planning, but the recent tax code change makes it potentially more powerful than ever before. Chapter 2 provides the analytical framework for quantifying the emission reductions of Commuter Choice programs and provides examples. The heart of the chapter is a basic four-step methodology for projecting emission reductions from Commuter Choice programs. Chapter 3 reviews legal and administrative requirements for using the emission reductions from Commuter Choice programs in SIPs.

ES-4. Methodology for Quantifying Emission Reductions

This guidance provides a basic four-step methodology for projecting emission reductions from Commuter Choice programs.

1	Population of Commute Vehicles: Estimate the number of passenger vehicles that are driven to work.
2	Potentially Affected Population: Estimate the proportion of these vehicles driven to employer work sites where Commuter Choice options are or will be available.
3	A Participation Rates: Forecast the type and value of new Commuter Choice benefits and estimate drivers' likely response to those new benefits.
	B Uncertainty: Incorporate compliance and programmatic uncertainty factors.
4	Emission Reductions: Estimate the total change in VMT and associated emission changes.

CHAPTER 1: COMMUTER CHOICE PROGRAMS AND COMMUTE BENEFIT OPTIONS

Many cities and states today are facing increasing problems with air pollution and traffic congestion, especially those experiencing significant growth. Commuter Choice offers several possibilities for these areas to work towards reducing air pollution and meeting air quality standards. Different forms of Commuter Choice programs allow states, local areas, public-private partnerships, and even employers to play lead roles in helping to improve air quality. In addition, recent changes in Federal tax law enhance the programs' appeal, inviting more cooperation from key players.

Commuter Choice is an important strategy to reduce emissions from passenger vehicles and improve air quality. Through Commuter Choice programs, employers offer one or more options from a diverse menu of commute benefits encouraging employees to commute by modes which are less polluting than driving alone. Recognizing the air quality benefits of a reduction in solo-commuting, Congress has established incentives giving employers and employees new ways to get tax savings in association with specified work commute benefits. These provisions, amended by the Transportation Equity Act for the 21st Century (title 9 section 910, PL 105-178), are contained in the Internal Revenue Code Section 132(f). The new tax law provides direct benefits for transit, vanpooling, and parking commute options. Under current law, qualified parking, transit, and vanpool benefits offered by employers are not subject to certain Federal taxes (up to specified limits). Employers may also offer Parking Cash Out as an option, where employees can trade employer-paid parking spaces for cash or other benefits. Appendix 5 summarizes the results of the recent changes in the tax laws and discusses some measures that can be considered for different types of Commuter Choice programs.

Commuter Choice programs are designed to meet local needs, preferences, and available options. They may be developed by an individual business or as part of a wider regional strategy. A state or agency may be interested in taking credit in a State Implementation Plan (SIP) for state- or agency-run Commuter Choice programs, for laws requiring private employers to offer commute benefits, and/or for other measures to encourage commuter benefits to be offered voluntarily by individual employers. Such encouragement includes public-private partnerships that provide employers with the means to easily implement Commuter Choice programs and provides the state or agency with adequate information upon which to base a SIP submittal. This guidance specifically serves the purpose of assisting states or agencies in preparing SIP submittals, particularly in meeting the quantification and legal requirements. Alternatively, Commuter Choice Programs can be used in Transportation Improvement Plans (TIPs) to help areas stay

within their emissions budgets for conformity purposes.

However, Commuter Choice programs may be initiated without involving a SIP submittal. Commuter Choice programs make sense for a variety of reasons other than improvement of air quality. Commuter Choice programs make it easier and more economical for people to get to work. Commuter Choice programs reduce congestion. These programs also have been shown to increase employee satisfaction. Furthermore, Commuter Choice programs improve employee retention rates and make the employer more competitive in a tight labor market. Commuter Choice programs are an employee benefit that doesn't need to increase employer costs and are popular with employees. A company that offers a Commuter Choice program meets its own needs and its employee's needs. EPA intends to recognize the air quality benefits of Commuter Choice programs in conjunction with necessary requirements, but companies can offer Commuter Choice programs regardless of whether their local area will be preparing a SIP submittal.

1.1. How Commuter Choice Programs Work

Reducing the frequency that commuters drive alone generates air quality benefits. Commuter Choice programs may include one, all, or a combination of the following individual benefits:

- Free or reduced cost passes for public transportation (such as subway cards, bus tokens, or train tickets),
- Transit and vanpool vouchers and subsidies,
- Services to facilitate vanpools and carpools (such as providing vans, ridematching, and guaranteed ride home services),
- Park and Ride subsidies,
- Telecommuting options (so employees can work at home more often),
- Proximate Commuting: a program that matches employees of multi-site employers (such as banks or chain stores) to the branch office nearest their home,
- Incentives to bike and walk, and
- Parking Cash Out: employees can trade employer-paid parking space for cash or other benefits.

With more options, commuters can be expected to use single-occupant vehicles less often.

Air quality improves due to the mode shifts which should reduce vehicle miles traveled, and thus emissions.

1.2. Definitions of Commuter Choice

As already mentioned, Commuter Choice is a blanket term to describe a variety of commute benefit-related measures. In this guidance, the phrase "Commuter Choice program" refers to a state-run, agency-run, or public-private partnership program to encourage or require employers to offer certain commute benefit-

Commuter Choice program means an organized program to encourage employers to offer flexible commute benefit options to employees.

Commute benefit options are any of a number of flexible commute benefits offered by employers. Basic Commuter Choice alternatives include transit benefits, vanpool benefits, cash, or parking.

related options to their employees. The phrase "commute benefit options" refers to an assortment of commute benefits offered by individual employers.

An employer's Commuter Choice program provides the employee with access to one or more commute choices. The employee makes an economic decision about the commute alternatives. Specifically, the new tax laws apply to transit commute benefits, vanpool commute benefits, cash in-lieu-of parking, or parking. If an employee chooses cash in-lieu-of parking (also known as "parking cash out") the employee receives additional pay that can be used, after taxes, as the employee wishes.² This cash could finance carpooling, bicycling, or walking. Cash could be pocketed if the employee telecommutes.

There is no "one size fits all" Commuter Choice program because commute alternatives, preferences, and flexibilities vary among areas, employers, and employees. This guidance is designed to assist states or agencies in designing and evaluating Commuter Choice programs in order to facilitate SIP submittals, recognizing that there is necessary variation in individual programs. Also, this guidance does not preclude unique and innovative programs not specifically mentioned here.

However, SIP submittals will be more expedient when the data elements are standardized and the methodology for calculating emission impacts are consistent across individual employer programs in an area. In order to facilitate expedient SIP submittals and approvals, Appendices 1 through 4 provide a blueprint for the principal elements of a voluntary Commuter Choice program. This Appendix is intended to be used as an example for specific voluntary programs that are designed to meet local needs. This example blueprint could be used with appropriate modification for other types of Commuter Choice programs, such as education and outreach programs, transit pass programs, mandatory programs, and others mentioned in this document.

1.3. Commute Benefit Options

Commuter benefits, defined as "qualified transportation fringes,"³ include free or subsidized parking spaces, transit passes, and vanpool subsidies. Historically, over 81% of employers have offered their employees only free or subsidized parking. The choice of other commute benefits (such as transit or vanpool benefits) or cash salary instead of parking was rarely offered. Recent changes in the law governing commute benefits make it more attractive for employers to offer a menu of commute benefits.⁴

With the new flexibility permitted under Federal tax law, employers may offer tax

² See Appendix 5 outlining how the benefits are offered under Commuter Choice: Commuter Benefits in Federal Tax Law and How Benefits Are Offered.

³ Please refer to Section 132(f) of the Internal Revenue Code, as amended Section 9010 of the Transportation Efficiency Act for the 21st Century (TEA-21).

⁴ The recent tax law changes are described in Appendix 5: Commuter Benefits in Federal Tax Law and How the Benefits Are Offered.

incentives for transit or vanpooling; or, offer a menu of commute choices including cash-in-lieu of parking. States may also encourage employers to offer other commute amenities such as bicycle lockers and showers, or to promote telecommuting or flex time. These options have shown multiple benefits to employers, employees, and the environment, compared to parking only.

Employers can offer employees a choice of tax-advantaged commute benefits, responding to employees' different needs and wants. Reducing employee demand for parking can free up parking spaces for customers or remove the need to build expensive new parking. This space can also be converted for revenue producing purposes. Employees benefit from a larger menu of subsidized transportation options. The environment benefits because Commuter Choice programs can reduce air pollution. And Commuter Choice can improve equity across employees by making commute benefits available to people who do not commute by car. Because lower-income workers, women, and some ethnic groups are relatively less likely to commute by car, Commuter Choice can improve distributional, gender, and racial equity.

The following are examples of commuter benefit options that might be included among Commuter Choice options offered by employers, and that have been implemented somewhere in recent years.

Transit or vanpool benefits The Federal tax code allows employers to offer up to \$65/month in *tax-exempt* transit or vanpool benefits (This amount will increase to \$100/month in 2002). For example, an employer may purchase a \$65 monthly subway or bus pass and give it to the employee. The employee would pay no payroll or income taxes on benefit. The employer would pay no payroll taxes for that employee's benefit and would deduct the \$65 expense per month, or \$780 annually, from business income taxes. Alternatively, the employee may ask the employer to *set aside* \$65 per month of existing (pre-tax) salary for a subway or bus pass. In this case, the employee saves Federal payroll and income taxes on the \$65 per month, and the employer saves Federal payroll taxes on that \$65 per month. The employee may not collect a tax-exempt amount in excess of his or her actual commuting expenses, however. If an employer provides \$100 per month in transit benefits, for example, but the employee's expenses are only \$40, then only \$40 of the benefit is tax-exempt. The balance of \$60 is treated as ordinary taxable income. About 1% of U.S. commuters are offered transit or vanpool benefits by their employer.⁵

Cash In-Lieu-Of Parking (i.e., Parking Cash Out) The Federal tax code provides up to \$175/month of parking at work tax free provided by the employer to employees. Beginning with tax year 1998, employers may offer employees taxable cash instead of a tax-exempt parking space *without losing the tax exemption for those who receive parking*. Until 1998, the tax code allowed employers to offer only free parking benefits and did not allow employers to offer a similar cash option to

⁵ *Commuter Choice Initiative, Weighted Survey Results, Employer-Provided Transportation Benefits*, prepared by KPMG Peat Marwick LLP for the Association for Commuter Transportation (ACT), November 3, 1995.

employees without penalty.

Direct agreements with transit providers In addition to offering free or reduced cost passes to employees who commute by transit, some employers have made arrangements with transit agencies who offer special programs that allow any employee to use the transit services for a flat fee per employee, regardless of how much each employee uses the system.

Telecommuting Enabling employees to telecommute part-time or full-time can eliminate commute trips altogether.

Services for ridesharers Policies like guaranteed ride home and car pool locator services help employees establish viable rideshare arrangements and cope with unexpected circumstances, making ridesharing and transit more attractive.

Monetary incentives to walk, bike, and rideshare Although the Federal tax code only provides direct tax advantages for parking, transit and vanpool benefits, employers have been creative about extending Commuter Choice to walkers, bikers, and car-poolers. For example, some employers provide a larger tax-exempt parking benefit to car-poolers (say, a subsidy of \$75/month towards a parking space worth \$150/month) than to drivers of single occupant vehicles (who only receive a subsidy of \$50/month), while walkers receive a taxable allowance of \$75/month. In addition, Parking Cash Out, described above, financially rewards commuting by modes other than single occupant vehicles even though the tax code does not mention benefits for walking, biking, or carpooling.

1.4. Commuter Choice Programs

There can be many types of Commuter Choice program. This document gives general guidance support for different types of programs that have been implemented or contemplated in recent years. These are not exclusive and state or agency programs may combine elements of several program types or limit their calculation only to a subset of elements.

1.4.1. Education or Outreach Programs--States, agencies, and public-private partnerships may take steps to inform employers and employees of the potential benefits of Commuter Choice and encourage employers to implement Commuter Choice options on a voluntary basis. Outreach programs could highlight the benefits to the employer of providing Commuter Choice options:

1. Commuter Choice options expand benefit choices, meeting diverse employee desires and improving employee satisfaction. Benefit options help attract and retain a quality workforce.
2. Because of changes to the Federal tax treatment of commute benefits in 1998, more benefit options can be provided without increasing employer

costs. It may even reduce costs.

3. Reducing employee parking needs can free up spaces for customers, reduce the need to build and/or maintain parking spaces, untie space which can be converted for revenue producing purposes, and/or the space can be intended for other use.

Outreach programs could also target employees, in the manner of some current, more limited Commuter Choice promotions. Although the employer must ultimately take the desired action, employees can be effective advocates when they realize that an employer can actually reduce their taxes or, in some cases, offer them more new benefits choice with money already spent on parking. Empirical data from employers offering Commuter Choice show that a significant proportion of employees are pleased to have, and will choose to exercise, their new choice (see Chapter 2).

Some of the benefits of providing employees with commute choices have been well-established in the literature; others are only now becoming better understood as more firms begin to offer commuter benefit options. However, many employers were slow to adopt these programs, and there was little point in promoting these advantages while the tax code penalized most commute benefits options compared to parking. The tax law now provides a strong incentive for states to promote commute benefits options as good for employers, employees, and the community.

States, agencies, and public-private partnerships can encourage employers to provide Commuter Choice options by running informational advertisements directed at employers and employees, by instituting commute benefits options in their own offices, and/or by rewarding or recognizing employers who implement successful programs. Educational efforts can also be targeted at appropriate professional groups in the State, including, for example, tax attorneys and human resources professionals. These groups are often the leaders in taking advantage of new tax incentives. Some governments around the country already promote Commuter Choice through advocacy, technical assistance, and funding.

1.4.2. Transit Pass Programs--A state, agency, or public-private partnership takes steps to make transit passes more accessible to employers, such as marketing transit pass programs to employers. Similar programs may be implemented for region-wide vanpool subsidies. Programs which promote the use of transit and vanpooling by making it

financially attractive for employers to provide tax savings to employees for their commute can be very effective. For example, in the New York metropolitan area, the TransitChek Program operated by TransitCenter is utilizing the Federal tax code to encourage employers to provide their employees with savings on their transit or vanpool commute. TransitCenter sells TransitChek vouchers and TransitChek MetroCards (a form of the fare media most used in New York City) to employers as a simple and cost effective way to provide the monthly \$65 transit and vanpool tax benefit to employees. The vouchers are accepted by all transit operators in the New Jersey, New York and Connecticut metro area in and around New York City for the purchase of fare media. TransitChek MetroCards are used directly on several services

including the NYC subway and buses. TransitCenter, a public-private organization, representing all the transit operators, markets and sells the program to employers. The TransitChek Program serves over 7,000 employers with over 150,000 employees. Because the program reduces the cost of commuting significantly, employees tend to use transit more than they otherwise would. In 1997, the TransitChek program generated 3.2 million additional transit rides, many of these trips would have been taken in single occupant cars. As a voluntary program, TransitChek has attracted employers because of its ease of administration and tax savings to both employers and employees.

Similar programs may be implemented for regional vanpool services. A Washington, D.C. program called Commuter Connections, for example, aims to help businesses voluntarily reduce employee driving to work. Its services include promoting and organizing ridesharing. Using a Geographic Information System software program, Commuter Connections matches commuters for ridesharing. The program has also launched a regional Guaranteed Ride Home program to "take the worries out of ridesharing."⁶

Employers may also work directly with transit agencies, when they offer special programs, to establish "fare-free" transit deals for staff. In a program in place at the University of California at San Diego since 1969, for example, San Diego Transit has provided unlimited access to anyone with student, faculty, or staff identification for a flat rate per year. From July 1997 through June 1998, the cost is \$178,000, or about \$5 for each of UC San Diego's 35,200 faculty, students and staff. The program avoids the transaction cost of purchasing individual transit passes, instead buying one pass for the entire campus community. Private employers in Silicon Valley in California have similar arrangements with the local transit agency. Transit pass programs could be a component of a broader educational program as described above.

1.4.3. Incentive Programs--A state or agency uses incentives (e.g., taxes, subsidies) or market-based programs to encourage employers to offer Commuter Choice options. Such programs may receive approval for using the associated emission reductions to meet SIP requirements through the Economic Incentive Policy. Incentive programs may be non-regulatory or may increase incentives for regulatory programs. Incentives may be financial (e.g., "parking cash out," tax breaks, subsidies) or non-financial (e.g., convenience, information, greater choice, waiver of regulatory requirements). Incentives are not requirements, but measures that make offering certain options more attractive. California offers two interesting examples. Section 65089 (d) of the California Government Code requires local zoning authorities to grant exemptions from minimum parking requirements to work sites that offer the option of cash in-lieu-of free parking. Section 17090 of the California Revenue and Taxation Code exempts from state income tax employee expenditures on carpooling and other alternative commute modes where employers offer Commuter Choice.

1.4.4. Mandatory programs--States may require certain employers to

⁶

See the Washington Metropolitan Transit Authority Web site: <http://www.wmta.com>.

implement some form of commuter benefit options. These mandatory programs can take different forms and be implemented at different levels. Mandatory programs can be approved into a SIP either through the normal SIP guidelines or through the Economic Incentives Policy.

In 1992, California enacted a mandatory Parking Cash Out program for selected employers in air quality non-attainment areas. The law requires employers that have 50 or more employees, that subsidize employee parking, and that can reduce the number of parking spaces without penalty, to provide employees the option to take cash instead of parking. The State law specifies that the cash offer must at least equal the parking subsidy.⁷ Implementation of the law had been held in abeyance because of a conflict with the Federal tax code. This conflict was removed by the Taxpayer Relief Act of 1997, which was further expanded by TEA-21. In 1998, California may enforce the law as it was originally intended—as a way of reducing air pollutant emissions from commute travel without raising employers' commute benefit expenditures.

The City of Santa Monica, California has incorporated the State's 1992 Parking Cash Out Law into its own local ordinance.⁸ Some states have retained the Employee Commute Options (ECO) programs that Federal law once required.⁹ For those states, existing ECO programs can be made more effective if combined with some of the new incentives made possible by the tax law changes. California employers who experimented with Parking Cash Out, for example, found it to be much more effective at reducing trips than anything they had tried under the ECO program.¹⁰ Places that have retained their ECO requirements, like Portland, Oregon, might measure the additional impact of the new options on their existing requirements, and adjust their SIP projections accordingly.¹¹

1.4.5. Commuter Choice Without State Action--Recent changes to the tax code facilitate actions by state or local governments in all of the above categories. The recent tax code change will also encourage some employers to begin offering Commuter Choice options even in the absence of government programs. EPA now allows such

⁷ California Health and Safety Code, Section 43845.

⁸ Santa Monica Ordinance Number 1604.

⁹ Employee Commute Options (ECO) programs were at one time required by the Clean Air Act in fourteen metropolitan areas classified as severe or extreme for ozone or carbon monoxide pollution. Under these programs, States required employers to implement trip reduction plans. The requirement was made flexible in 1995, but some states continue to require trip reduction efforts by employers.

¹⁰ Donald Shoup, "Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies," *Transport Policy*, Vol. 4, Number 4, 1997.

¹¹ Employers in the Portland area with more than 50 employees reporting to a single work site must provide incentives for alternative commute options. The alternatives, which include options such as transit subsidies, rideshare programs, bike programs, and telecommuting, must have the potential to reduce the number of employee cars driven to the work site by approximately 10 percent within three years. Employers are required to survey their employees to determine current commute methods and then submit a plan to meet the target reduction to the Department of Environmental Quality. Employers design and implement a program without DEQ's review and after three years, compliance status is granted or denied on the basis of whether or not a good faith effort was made to achieve the target outlined in the plan.

programs to be used in meeting SIP requirements under EPA's Voluntary Mobile Source Emission Policy (VMEP). For example, a public-private partnership may undertake a region-wide Commuter Choice initiative and work with employers in offering commute benefits. A state or agency can now use the emission reductions from such a voluntary program, according to VMEP guidance, in meeting SIP requirements. Most SIPs submitted before the 1998 tax changes will not have included the effects of expanded employer-provided Commuter Choice options in their baselines. In most cases, emission reductions that result from employers offering expanded commuter benefit options in the absence of state action should be approvable in a SIP, even if those reductions do not directly result from a government Commuter Choice program.

The tax changes make it far more appealing for employers to offer a menu of commute benefits by allowing them to finance commute choices with money already being spent on compensation and benefits. Because commute benefit options can increase employee satisfaction and retention, and help employers and employees manage transportation-related costs, it is likely that some employers will begin offering commute benefits options even in the absence of government programs that encourage or require them to do so. Because SIPs submitted before the passage of the 1998 tax changes will not have included the effects of these autonomous employer actions, states should in most cases be able either to take credit for the expected emission reductions, or adjust their baseline emissions projections in response. EPA emphasizes, however, that States are responsible for quantifying Commuter Choice activity and demonstrating associated emission reductions in order to include these reductions in the SIP. (Detailed requirements for using Commuter Choice related emission reductions to meet SIP requirements are reviewed in Chapter 3.)

CHAPTER 2: ESTIMATING EMISSION REDUCTIONS

To receive EPA approval for a State Implementation Plan (SIP) that includes emission reductions associated with a Commuter Choice program, the SIP submittal must include, among other requirements, a quantitative estimate of emission reductions, including technical support documentation for the anticipated emission reductions.¹² This section provides a template that air quality and transportation planners may use to begin to quantitatively estimate the emissions reduction potential of a particular state or agency's Commuter Choice program.

EPA emphasizes that areas should use locally derived data specific to the program region whenever possible. National average data is used in this guidance for illustrative purposes only. Use of any data other than locally derived information may require the emission reduction estimate for which credit is taken to be reduced. The methodology outlined in this guidance may not be adequate in all instances. EPA will accept variations on the methodology described in this guidance, and will evaluate any methodology in light of submitted supporting documentation. The Agency will work cooperatively with any state or agency that is considering Commuter Choice programs to estimate the effects of such measures. Regional EPA representatives to contact about Commuter Choice programs are listed in Appendix 6.

Accurately forecasting the impacts of Commuter Choice programs is challenging for several reasons. First, Commuter Choice programs work by changing financial incentives, and traditional transportation modeling techniques rarely include financial variables. While traditional modeling techniques such as the four-step travel modeling process can include the financial variables, most do not.¹³ Second, the success of state Commuter Choice programs, even mandatory programs, depends on choices by employers and commuters whose outcome may be difficult to predict.

The following is a basic method for quantifying emission reductions, with suggestions for refinements that states or agencies may want to employ in particular situations. EPA recognizes that actual emissions reductions from Commuter Choice programs may differ

¹² See Chapter 3 for a complete list of requirements that must be met to receive SIP credit for State programs.

¹³ The EPA document *Guidance on the Use of Market Mechanisms to Reduce Transportation Emissions* discusses modeling upgrades that will improve estimates of travel and emissions impacts from market mechanisms like Commuter Choice yielded by transportation models.

from predicted reductions, and will work with states to audit programs and reconcile actual reductions with SIP-credited reductions.

2.1. Four-step Protocol

This section describes a four-step protocol for estimating the emissions impacts of Commuter Choice programs.

1	Population of Commute Vehicles: Estimate the number of passenger vehicles that are driven to work.
2	Potentially Affected Population: Estimate the proportion of these vehicles driven to employer work sites where Commuter Choice options are or will be available.
3	A Participation Rates: Forecast the type and value of new Commuter Choice benefits and estimate drivers' likely response to those new benefits.
	B Uncertainty: Incorporate compliance and programmatic uncertainty factors.
4	Emission Reductions: Estimate the total change in VMT and associated emission changes.

2.2. Step 1: Estimate the Relevant Population of Vehicles Driven to Work

Estimating the potential emissions reduction of a Commuter Choice program will usually begin with an estimate of the total number of single-occupant vehicles driven to work by employees in the program region.¹⁴ The program region may be an entire metropolitan area or a sub-region (e.g., a downtown area) for more targeted programs. The number of single-occupant vehicles that are driven to work is the difference of two numbers: (1) the total labor force, less (2) the number of employees who do not commute to work in SOVs. If the percentage of SOV drivers has already been derived for other purposes for the program region, areas may use that information, describe its derivation, and skip the method described in this section.

$$\text{POTENTIALLY AFFECTED POPULATION} = (\text{LABOR FORCE}) - (\text{non-SOV commuters})$$

¹⁴ While the predominant effect of Commuter Choice options will be to shift SOV drivers to other modes, another effect will be to shift commuters who now rideshare to even higher occupancy modes (e.g., a 2-person carpool to transit). An analysis similar to the one outlined in this section could estimate how many existing car-poolers would switch to higher occupancy modes.

2.2.1. Labor Force--Estimates of a region's labor force may be obtained from a number of local and national sources. Recent and specific estimates of employment, based on economic growth trends, should be used if available or calculated if reasonably possible. Business research organizations such as DRI/McGraw Hill or Dun and Bradstreet produce a variety of employment projection information. Other possible data sources for economic and employment data specific to the program region include state economic development agencies and metropolitan planning organizations. Less current county and state-level employment data are available from sources such as the *County and City Data Book* and the *State and Metropolitan Data Book*, both from the U.S. Department of Commerce. These sources base their estimates on the results of the latest census (currently 1990).

2.2.2. Adjustment for Employees Not Driving to Work Alone--Some fraction of the labor force does not drive to work alone, either because they don't commute to work at all, in the traditional sense, or because they already commute by a non-SOV mode such as carpooling, transit, biking, or walking. Agricultural workers, people who work at home, and workers in industries such as trucking do not generally "commute to work" in a way that is relevant to Commuter Choice options. Labor force estimates should be adjusted downward accordingly. EPA expects that many, if not most, areas will have locally derived mode share information that is already used in regional transportation modeling. Where locally derived mode share information is not available, data from the Nationwide Personal Transportation Survey (NPTS), available from the U.S. Department of Transportation, can be used to estimate commute mode share.¹⁵

The total labor force less workers that do not commute to work in the traditional sense should then be divided according to mode share. The percentage that commutes by SOV is the population of most interest in a Commuter Choice program because this is the largest group from which emissions reductions can be gained. Commuter Choice programs may also affect the smaller group of existing car-poolers. Emissions reductions would result from switching car-poolers to even higher occupancy modes (e.g., two-person carpools to transit/vanpools) or to walking or bicycling.

2.3. Step 2: Estimate the Proportion of These Vehicles Driven to Employer Work Sites Where Commuter Choice Options Are or Will Be Available

Whatever the nature of a state's Commuter Choice program, only a certain fraction of employers will alter their commute benefits options. If the program is mandatory for employers, employer participation rates will depend on a program's specific design, and

¹⁵

The most recent survey, conducted in 1995, is based on information from telephone interviews of 95,360 persons in 42,033 households. Analysis based on the 1995 data is not yet available, but analysis from the 1990 NPTS is useful for these purposes. As analysis from the 1995 NPTS becomes available, the more recent information should be used where local data is unavailable. For additional information on the Nationwide Personal Transportation Survey and using its data, contact Bryant Gross, Data User Support, (202) 366-5026, Bryant.Gross@fhwa.dot.gov, or see the 1995 NPTS User Services page: http://www-cta.ornl.gov/npts/1995/doc/user_services.html-ssi. A variety of secondary sources based on the 1990 NPTS are available; some of these are listed in the Subject Bibliography.

on how the program is enforced. If the program is voluntary, rates will vary according to how strongly the State markets the program and whether additional incentives are offered to encourage employers to participate. The specific methodology used to determine the population of participating employers, and the resultant population of employees offered Commuter Choice options, will depend significantly on individual program structure and regional characteristics. In general, a state or agency would need to answer the following questions about its program.

2.3.1. How Many Employers Does the State or Agency Program Target?--Program characteristics should be matched to employer demographics. A program that targets large employers, for example, would not count small employers among likely participants. Data on employer demographics is available from, among other sources, The *State and Metropolitan Area Data Book* (U.S. Department of Commerce), which includes information about the number of employment establishments by size class, as well as employment levels by size class, by state and metropolitan area. Local information should be used whenever possible.

2.3.2. How Many Workers Do Targeted Employers Employ?--The data to answer this question is also available from the *State and Metropolitan Area Data Book* (US Department of Commerce). The number of employees at targeted employers multiplied by the percentage share of SOV commuters is the total population that could be offered Commuter Choice options and for whom reductions in vehicle travel might occur. Local information should be used whenever possible.

2.3.3. Is the Program Mandatory or Voluntary?--The number of workers that actually will be offered Commuter Choice options depends upon how many of the targeted employers begin offering options, and this is perhaps the most complicated part of Step Two. Even a mandatory program will not achieve 100% compliance with the mandate, and participation in a voluntary program will have to be estimated by reference to other similar programs. Below we explain a recommended approach to a mandatory program and to a voluntary program. Some issues discussed below in one section (e.g. business relocation or parking lease arrangements) may be issues for both types of programs depending on the program's design.

2.3.3.1. Mandatory--A mandatory program implemented through the state tax code, with aggressive education and enforcement, could use as a starting point for estimating compliance the rate observed with respect to general tax liability, or about 80%.¹⁶ EPA will review other rationales for estimating compliance. Whatever the basis for the estimate, States should explain how the compliance rate they use compares to the reference rationale of tax compliance or to another reference rationale. A mandatory program with no education or enforcement, for example, would not

¹⁶ Individual taxpayers voluntarily pay about 83% of the income taxes they owe, while corporate taxpayers pay about 78%. Compliance with employment-related tax provisions is usually higher, above 90%, because FICA, Medicare, unemployment taxes and so forth are reported in several places and can therefore be more readily cross-validated than other types of tax provisions. GAO, "Taxpayer Compliance: Analyzing the Nature of the Income Tax Gap," T-GCD-97-35, Jan. 9, 1997; and GAO, "Tax Administration: Alternative Strategies to Obtain Compliance Data," April 26, 1996, GAO/GGD-96-89.

support the use of the compliance rate associated with tax measures generally. Conversely, a mandatory program with extensive education and enforcement might support a rate higher than 80%. In either case, States should expect to measure the actual compliance rate as part of their general program audit, discussed in Chapter 3 below.

2.3.3.2. Voluntary--For a voluntary program, the State will have to estimate the fluidity of the market for employer-provided parking. How easy will it be for an employer to convert a parking benefit into other benefits? The most common distinction made about employer-provided parking is whether the parking is leased or owned by the employer. The general presumption is that a firm can more easily shed leased parking than owned parking, so it will be easier for firms that lease parking to convert free parking into other benefits. Other sources of information on this point include the rate of business relocation, since relocation offers an opportunity to reallocate all parking benefits in one step; and overall growth in employment, since adding employees or work sites are also opportunities to fully exchange a parking benefit for another benefit.¹⁷ Local zoning policies about parking will also affect fluidity—employers in an area that waives minimum parking requirements for sites where parking demand is managed with a Commuter Choice program, for example, can convert that parking into other uses.¹⁸ Conversion of parking is particularly attractive when the parking is located in areas with high land values and low commercial vacancy rates—owned parking in these areas is probably more likely to be converted than owned parking in areas with low land values or high commercial vacancy rates.

Data on whether parking is leased or owned are available from two national surveys listed in the Subject Bibliography, but the data are not particularly reliable for anything other than national estimates. However, both surveys show that small employers are much more likely than large employers to lease the parking they provide to employees, suggesting the importance of including smaller employers in Commuter Choice programs. Table 1 summarizes the information from these surveys on leased parking by employer size. The rate of business relocation and overall growth in employment are better understood and more readily available at the local or state level.

EPA suggests that states or agencies assemble information on fluidity, and use that to help estimate employer participation in a voluntary program.

¹⁷ A local council in New Jersey recently suggested that before they approved a new parking garage, they wanted the employer to first offer expanded commuter benefit options to see if that would reduce the need for parking such that the garage was unnecessary. In Somers, New York, the Town Planning Board recently instructed IBM to consider offering expanded commuter benefit options to its employees as a way of managing parking demand instead of placing blacktop over a portion of a watershed to create 700 new parking spaces for 800 new employees.

¹⁸ At one point when office space was scarce, EPA located offices in a former underground parking garage (without removing the speed bumps).

Employees that will relocate or be newly hired during the program period are more likely to be offered Commuter Choice options by their employers. To support the estimate of employer participation, the state or agency program must be adequate to reach decision-makers at targeted employers. Similarly, other factors that affect employer participation include whether areas remove zoning barriers to converting parking to other uses, and whether states offer additional tax or regulatory incentives to make Commuter Choice options more attractive. In addition, information about industry types of the targeted employers, support for cleaner air or reduced regional traffic congestion on the part of employers, or availability of commute alternatives such as transit at targeted employers could all be relevant to an estimate of employer propensity to offer Commuter Choice options.

Table 1: Summary Statistics on Leased Parking by Employer Size

Commuter Choice Initiative Survey		Shoup, Breinholt Survey	
<u>Firm Size</u> <u>parking*</u>	<u>Percent that lease</u>	<u>Firm Size</u> <u>parking</u>	<u>Percent that lease</u>
Up to 4 employees	40 %	19 or fewer employees	32 %
5 to 25 employees	41 %	20 to 49 employees	26 %
26 to 99 employees	38 %	50 or more employees	21 %
100 to 499 employees	27 %	Size unreported	31 %
500+ employees	31 %		
*This column includes some employers who reimburse employees for parking expenses.			

The extent to which employers have adopted other flexible employee benefits plans enabled by the Federal tax code provides a reference point for estimates of employer adoption of the more flexible commuter benefits options newly enabled in the Federal tax code. Other flexible employee benefit plans include flexible spending and flexible savings accounts such as cafeteria plans and medical savings accounts. (Commuter benefit options are like cafeteria plans and medical savings accounts in that they offer employees choice between taxable salary and tax-exempt benefits, although the tax-exempt benefits offered by each type of plan differ). EPA suggests that the estimated percentage of employers who adopt commuter benefits options be compared to the percentage of employers who already offer these other flexible employee benefits plans.

In 1993, for example, 52% of large employers offered either flexible spending or flexible savings accounts, while in 1994, 19% of small employers did. Updated information can be obtained from the most recent Department of Labor publications "Employee Benefits in Small and Medium Private Establishments," and "Employee Benefits in Large Private Establishments." If the estimate for the

percentage of employers that will offer flexible Commuter Choice options is higher than the percentage that has offered flexible benefits plans, a state should explain why they expect to achieve greater penetration of commuter benefits options than has been observed with existing flexible benefits plans.

2.3.3.3. Mandatory Vs. Voluntary Programs--EPA expects that it will be easier to estimate emissions impacts for mandatory programs, and that, as discussed in Step 3B, those estimates will have narrower error bounds than for equivalent voluntary programs.

2.3.4. What If the State or Agency Has No Program?--If a state or agency has no Commuter Choice program, but still wants to count emission reductions in a SIP from employers who begin offering Commuter Choice options, it should begin by developing an estimate as for a voluntary program. The State should then consider what evidence there is that information about the tax code change will be disseminated in the state. The tax section of the State Bar Association, for example, may be sponsoring workshops that will cover the changes to the commuter benefits provisions. Service firms that specialize in outsourcing human resources functions may be marketing commute benefit options to their clients as a new way to improve employee satisfaction. Leading employers may have announced that they direct part of their pre-tax salary to pay for eligible cafeteria plan items, such as dependent care expenses. By doing so, they lower their taxable salary. If they do not elect to allocate salary to such items through a cafeteria plan, they increase their taxable salary. Similarly, an employee who is offered cash in lieu of parking increases their taxable salary if they take the cash instead of the parking. They reduce their taxable salary if they take the parking instead of the cash.

This option is unusual in tax law. Ordinarily, the tax principle of “constructive receipt” means that if employees have the option of taking a taxable item or a tax-exempt item, they are taxed as if they had accepted the taxable item even if they opt for the tax-exempt item.¹⁹

Alternatively, Local city councils may recommend or require employers to offer Commuter Choice options before approving new parking construction, as has already occurred in a few areas (see footnote 20). The State should then adjust the estimate for the voluntary program appropriately, considering evidence that relevant people will be aware of and motivated to take advantage of the new commuter benefits provisions of the Federal tax code.

¹⁹ For a discussion of constructive receipt, see *United States Master Tax Guide 80th Edition*, C.C.H. Inc. 1996, paragraph 1533, which reads in part:

It is not always necessary that money or property representing income actually be in the taxpayer's possession before it is considered received. Income that is constructively received is taxed as though it had been actually received. There is constructive receipt when income is credited without restriction and made available to the taxpayer. There must be no substantial limitation or condition on the taxpayer's right to bring the funds within his control.

Advanced Analysis: A region could generate local information by conducting employer surveys of all of the relevant parameters described above, and of employer intentions in the area of commute benefit options. Local surveys are not required, but EPA encourages them whenever feasible because they can reduce uncertainty surrounding emissions estimates, and therefore potentially support the award of more SIP credit. EPA recommends that areas consult with EPA staff before conducting such a survey.

2.4. Step 3a: Estimate the Typical Effectiveness of a Commute Benefit Options Program.

The effectiveness of a Commuter Choice program—its impact on commuting—is largely determined by the magnitude of the incentives the program creates for commuters and the travel options available to them. Commuter Choice programs and the commute benefits options they encourage are typically effective because they change a powerful incentive to drive alone—free parking—into a powerful incentive not to drive alone—cash or other benefits. Since parking can be very expensive, the incentive may be significant. And, of course, program effectiveness increases with the number and attractiveness of alternatives to driving alone.

Suppose, for example, that employers begin to offer \$80 per month in taxable cash to employees who give up their \$80 parking space. How have the financial incentives offered the employee changed? Before parking cash out, the employee spent \$0 on parking; her only costs for commuting to work were the variable costs of using her car, like gas, oil, and tires. Now, because the employee must forego \$80 in taxable cash, the parking space “costs” her \$80, less about \$24 she would pay in income taxes, or \$56. So driving alone to work has just become \$56 per month more expensive. The response of commuters, in the aggregate, to a \$56 per month increase in the cost of driving to work alone can be estimated using empirically derived estimates of consumer responses to price changes, called “elasticities” by economists.

2.4.1. Average Value of Benefits Other than Parking Offered in the Program Region--The value of incentives that Commuter Choice options create for employees will differ with each employer. Employers may offer transit passes, other benefits, or may exchange parking spaces for a cash payment of equivalent, greater, or lesser value. On average, EPA suggests that states assume that employers will seek to offer their employees more choice in benefits without reducing the overall value of the benefits. Even though individual employers will sometimes offer more or less, a regional analysis could use the average value of employer provided parking as the basis for the estimated average value of commute benefit alternatives offered instead of parking.²⁰ The Subject Bibliography includes a list of sources of information on parking value. EPA emphasizes, however, that the value of parking is just one way to attempt to get at the true variable of interest: the value of benefits offered instead of parking. Suppose, for example, that an option like parking cash out is being considered as an alternative to new parking construction. It is entirely possible that the cost of building new parking would be

²⁰ In a study of eight California firms that have complied with that state’s Parking Cash Out law, seven firms offered more benefits after cash out, one offered fewer; overall spending on commute benefits increased by an average of \$2 per employee per month at the eight case study firms.

only peripherally related to benefits that an employer would be willing to offer to obviate the need for the new parking facility. The employer may be able to manage parking demand by offering employees less than the amortized cost of building and maintaining new parking facilities, and might be willing to offer more than that cost in order to avoid the time and regulatory uncertainties associated with new construction. EPA invites other means of estimating the average value of benefits offered instead of parking in the program region.

2.4.2. Response of Commuters to New Commute Benefit Options--

Note: The values used in this section are included only to illustrate an example. EPA does not believe they are generally appropriate, and expects to see an explanation and justification of each parameter used in a SIP submission for a Commuter Choice program.

The elasticity of demand for driving measures how the amount of driving changes as the price of driving changes. Before and after case studies of areas that increased parking costs found the average elasticity of demand for automobile travel with respect to parking price to be -0.15.²¹ This means that on average, a 10 percent increase in the price of parking would decrease the number of solo commuters by 1.5 percent. This elasticity that is specific to changes in the cost of parking is consistent with the much larger literature that measures changes in travel in response to price changes generally, such as from changes in gasoline price. In that literature, the range of the elasticity of demand for VMT with respect to the price of driving ranges from -0.1 to -0.3.²² In choosing an elasticity estimate, areas should consider unusual characteristics of the program region that affect how readily people might reduce use of motor vehicles for commuting in response to price changes. Areas should also consider the duration of the program that would be approved in the SIP. In general, the more alternatives that are available to an item for which the price has changed, the more consumers will respond to the price change. Similarly, consumer response is more flexible over longer time periods than shorter time periods.

In our example, the cost of driving to work rose by \$56 per month. The national average cost of driving, counting gas, tires, and oil, and vehicle maintenance, is 10.8 cents per mile,²³ and the national average round trip commute length is 23.2 miles.²⁴ The total cost of the average commute before Parking Cash Out is \$55.12 per month (assuming a typical 22 commute days a month), and \$111.12 after Parking Cash Out. From a price increase of 201%, using the -0.15 elasticity above we would estimate that solo driving to those

²¹ Donald Shoup, "An Opportunity to Reduce Minimum Parking Requirements," *Journal of the American Planning Association*, Winter 1995, pp. 14-28.

²² Carol Dahl, "A Survey of Energy Demand Elasticities in Support of the Development of the NEMS," US DOE, Contract De-AP01-93EI23499, October, 1993.

²³ American Automobile Association, 1996.

²⁴ National Personal Transportation Survey, 1995.

work sites that offered Commuter Choice options would fall by 30% ($201\% * -0.15$).²⁵ Effects of this size on solo mode share from differences in parking prices are consistent with empirical results. In a matched set of employees, for example, those who received free parking at work drove 72 cars per 100 employees, while those who paid for parking at work drove 53 cars per 100 employees, or 26% less.²⁶ The decline in vehicles driven to work, multiplied by the average commute length, would yield an estimate of the reduction in vehicle miles traveled (VMT) that would then be used, with some adjustment described in the next section, to estimate emission reductions in Step Four.

Advanced analysis: Specific information on the value of benefits that will be offered instead of parking, including not just average values but the distribution of values, will increase the accuracy and certainty of the estimates in this step. As suggested above, parking value is one way to tackle the problem, but not the only one. States and agencies could investigate local sources of data, and incorporate local information where it exists.

2.4.3. Estimate Emissions Offsets--The EPA document *Methodologies for Estimating Emission and Travel Activity Effects of TCMs* includes a “sketch planning” method for estimating emissions offsets for programs, like Commuter Choice, that will result in some new offsetting trips. For example, an SOV commuter might switch to a combination of a car trip and a transit trip. Emissions from the shorter car trip to transit are an upward “offset” to the overall estimate of emission reductions from the aggregate fall in SOV trips. Similarly, new trips might be generated if a particularly congested corridor becomes less congested. Downward offsets are also possible, for example for lunchtime trips that are eliminated when a car is not used to commute to work. The *TCMs* guidance provides instruction on how to adjust outputs from the MOBILE model so that changes in trip-making are reflected in the MOBILE emission factors for hot- and cold-start exhaust, hot soak, and diurnal emissions which are implicit in MOBILE’s gram-per-mile emissions factors. A second offset adjustment is also necessary to account for the effect of VMT changes on hot-stabilized exhaust, running loss, and refueling emissions. VMT is not itself an input to the MOBILE or EMFAC models. Therefore, the estimate of VMT reductions must also be produced to derive an estimate of the hot-stabilized portion of the change in VMT. These two sets of emissions changes are added together.

An alternate way to ensure that offsetting emissions are adequately estimated is to upgrade travel models along the lines described in the *Market-Based Guidance*, particularly with respect to incorporating feedback loops in travel models.²⁷ Modeling upgrades described in this guidance can improve estimates of the inputs to MOBILE or

²⁵ See the Subject Bibliography for a list of literature that has examined the impact of changes in the price of parking on driving.

²⁶ Donald Shoup, “An Opportunity to Reduce Minimum Parking Requirements,” *Journal of the American Planning Association*, Winter 1995, pp. 14-28.

²⁷ In addition to the *Market Based Guidance*, documents discussing specific modeling issues will be helpful. See, for example, *Incorporating Feedback in Travel Forecasting: Methods, Pitfalls, and Common Concerns*, Travel Model Improvement Program, US DOT, US EPA, US DOE, March, 1996. Document # DOT-T-96-14.

EMFAC and of VMT at once, and would produce more reliable estimates than the sketch planning method can. Modeling improvements such as these are preferred to offline analysis.

2.5. Step 3B: Incorporate compliance and programmatic uncertainty factors

EPA guidance generally provides that emissions estimates of control programs need to be tempered with explicit factors accounting for compliance and programmatic uncertainty. Compliance uncertainty is a measure of the likelihood that the program will be implemented and its terms followed. Compliance uncertainty means something different for voluntary and mandatory programs. For mandatory programs, “compliance” concerns uncertainty about compliance and enforcement. For voluntary programs, “compliance” refers to the number of targeted employers that begin to offer Commuter Choice options, and is probably better referred to as “participation.” For both types of programs, programmatic uncertainty is a measure of how well participants will respond to the program. It concerns the program’s effects on participants, such as how much cash in lieu of free parking will affect commute mode choice.

2.5.1. Compliance or Participation Uncertainty--Perfect enforcement of mandatory programs would produce 100% compliance by affected employers. But 100% compliance is of course improbable. In voluntary programs, the best education and outreach efforts would not produce 100% participation by targeted employers, since some employers would probably decide that offering Commuter Choice options did not fit with their overall benefits plan. The extent to which mandated employers will comply with or targeted employers will participate in these programs should have already been explicitly considered in Step Two of the analysis. EPA expects that compliance error bounds (for mandatory programs) can be narrower than participation error bounds for otherwise equivalent voluntary programs.

2.5.2. Programmatic Uncertainty--Programmatic uncertainty should be estimated for both voluntary and mandatory programs. Because no comparisons have been made between the projected and actual impacts of Commuter Choice programs, programmatic uncertainty is difficult to estimate. Users of this document are encouraged to make their own upper and lower bound estimates by varying the assumptions relevant to programmatic uncertainty used in earlier steps in the analysis. A range of consumer response to new incentives, for example, should be modeled under both types of programs. Other variables that should be modeled over an appropriate range include but are not limited to the average value of benefits offered instead of parking, and the “fluidity” of the employer-provided parking market. Error bounds for various aspects of transportation models are suggested in the transportation planning literature.²⁸ The appropriate error range will also vary with the SIP planning horizon, with shorter horizons ordinarily allowing narrower error bounds than longer horizons.

2.6. Step 4: Estimate Emissions Reduction

²⁸

See, e.g., *Calibration and Adjustment of System Planning Models*, FHWA, 1990.

This procedure is performed by estimating the effects of vehicle travel reductions on the average emissions of vehicles in a local fleet using an approved emissions factor model (MOBILE in 49 states or EMFAC in California). These models take information on vehicle trips, speeds, and the distribution of vehicle miles across vehicle categories, combine it with information on the composition of the local vehicle fleet and its emissions characteristics, and generate estimates of emission factors (usually expressed in grams per mile) by type of pollutant. MOBILE is used to estimate VOC, CO and NO_x emission factors, while a similar model, PART 5, is used to estimate PM₁₀. EMFAC includes CO, NO_x, VOC and PM₁₀ for tail pipe, brake wear, and tire wear emissions. Future EMFAC versions may incorporate re-entrained dust emissions. Analysis using an EPA-approved emissions model is required for SIP approval for any emissions control strategy. The modeling is designed to capture changes in driving or trip characteristics that might result from Commuter Choice programs and would in turn affect emissions factors, such as a change in vehicle speeds or in the ratio of cold start to running emissions per trip. Estimates of emission reductions for each pollutant are the difference between the product of the previously estimated VMT and emission factor, and the revised VMT and emission factor, for each pollutant.²⁹ While EPA requires use of an approved emissions model for SIP credit, more basic preliminary analyses can be very informative as a community explores the potential of Commuter Choice programs to improve air quality and produce other environmental and economic benefits. Using a simple per-mile emissions factor, for example, multiplied by the VMT decrease from employees taking advantage of Commuter Choice options, will give a rough indication of reductions in air pollutant emissions from the program. Commuter Choice programs may also reduce traffic congestion, decrease emissions of greenhouse gases that contribute to global climate change, and reduce stormwater runoff pollution, among other benefits.³⁰

²⁹ $(VMT_{old} * EF_{old}) - (VMT_{new} * EF_{new}) = \text{Estimate of emissions reduction}$

³⁰ For more information, see the EPA report *Indicators of the Environmental Impacts of Transportation*, EPA 230-R-96-009, October, 1996. The document is available electronically from the EPA web site: www.epa.gov/tp.

CHAPTER 3: LEGAL BASIS OF SIP CREDITS FOR, AND CLEAN AIR ACT REQUIREMENTS RELATING TO, COMMUTER CHOICE PROGRAMS

EPA's legal authority to approve emission reduction estimates in SIPs, and to disapprove estimates under specific circumstances, is contained in Section 110 of the Clean Air Act. This document does not stand alone, but rather supports four Guidances issued by EPA that either discuss inclusion of different types of Commuter Choice programs in the SIP or describe modeling improvements to better estimate emission reductions from programs like Commuter Choice. These Guidances are EPA's Economic Incentives Program (EIP) Rule, *Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans* (referred to as the VMEP Guidance), *Methodologies for Estimating Emission and Travel Activity Effects of TCMs*, and *Guidance on the Use of Market Mechanisms to Reduce Transportation Emissions*. In addition, specific provisions of the Clean Air Act include candidate transportation control measures and set forth requirements for SIPs including these measures in some cases.³¹

This chapter describes minimum requirements typically used by EPA in approving any SIP program. By reference to published policies, this section goes on to discuss specific issues that may arise for Commuter Choice programs. Finally, this section briefly describes the situations in which credits may be used to satisfy Clean Air Act requirements for emission reductions.

3.1. General Requirements of the Clean Air Act for SIP Programs

The basic Clean Air Act framework for any state program may be described as follows. The State Authority or agency submits to EPA a proposed State Implementation Plan (SIP) revision that describes the program; contains projections of emission reductions attributable to the program; and commits to implement and enforce the program. In general, EPA requires at least the following of any program, including any Commuter Choice program.

³¹ See, for example, Clean Air Act sections 108 (f), 182 (d) (1) (A), 187 (a) (2) (A) and (B), and 187 (b) (2). These general requirements are further discussed in EPA's proposed *General Preamble for Implementation of Title I of the Clean Air Act Amendments of 1990*, 57 FR 13498 (April 16, 1992).

- Expected emission reductions must be estimated in **quantitative** terms (e.g., following the protocols described in Chapter 2 of this document) and uncertainties surrounding those estimates must be quantified as well.
- The state's commitments with respect to the program must be legally and practically **enforceable** at the state level and, through EPA approval of the SIP submission, at the Federal level.
- Emission reductions must be **permanent** for at least the time period in which they are used for applicable SIP demonstrations. However, TCMs listed in Section 108 (f) that are seasonal or episodic in nature, e.g., those that operate during ozone season or on ozone alert days, are also permitted.³²
- Emission reductions must be **surplus**, i.e., they must be at a minimum in addition to those already included in SIP demonstrations, to any reductions used in any control strategies or programs (e.g., emissions trading programs), and to any reductions assumed in existing or projected baseline inventories.
- The state must commit **adequate personnel and program resources** to implement its responsibilities under the program, and demonstrate that full authority exists for the parties which are to implement strategies to do so.³³
- The state must include schedules and timetables for implementation of the proposed strategies.

In addition, for SIP submittals under the EIP Rules or the VMEP Guidance (described in the next section), the following requirement applies:

- The state must commit to **regular monitoring, evaluation and reporting** on program effectiveness relative to expected emission reductions, and to remedying any emissions shortfall in a timely manner.

3.2. EPA Policies with Specific Guidance for Commuter Choice Programs

No existing EPA policy references Commuter Choice programs by name. However, four existing agency documents, listed here in chronological order of publication, may provide more guidance on credit for Commuter Choice programs.

- *Economic Incentives Program Rules*, published in the Federal Register on April 7, 1994.³⁴ This document is referenced here as the EIP Rules.
- *Methodologies for Estimating Emission and Travel Activity Effects of TCMs*, published by EPA in July, 1994. This document is referenced here as the 1994 TCMs Guidance.
- *Guidance on Incorporating Voluntary Mobile Source Emissions Reduction Programs in State Implementation Plans*, released on October 24, 1997. This document is referenced here as the VMEP Guidance.

³² See VMEP Guidance, pp. 7-8, for a discussion of Section 108 (f) episodic measures in light of Section 123.

³³ Under VMEP, third parties may assume responsibility for implementation, and resources and personnel for the program may originate with third parties. In such a case, the state need only commit resources and personnel adequate to fulfill its own responsibility.

³⁴ 59 FR 16690 et seq.

- *Guidance on the Use of Market Mechanisms to Reduce Transportation Emissions*, scheduled for release in April, 1998. This document is referenced here as the Market Mechanisms Guidance.

The EIP Rules provide more general guidance on economic incentives such as market-response strategies that create incentives for individuals to reduce emissions, without directly prescribing emissions limits or emissions-related parameters. Incentive or mandatory Commuter Choice programs may be considered economic incentives of this type. The VMEP Guidance provides more specific guidance on voluntary measures: programs that rely largely on voluntary actions of individuals or other parties for achieving emission reductions. Education and outreach or transit pass Commuter Choice programs may fall into this category. There may be exceptions to this general distinction between the EIP Rules and the VMEP Guidance.³⁵ The 1994 TCMs guidance is a 10-step sketch planning tool for estimating the travel and emissions effects of a number of transportation control measures (TCMs); it includes an example on parking charges that would be particularly helpful for a Commuter Choice program. The Market Mechanisms guidance provides more information on transportation and emissions modeling issues that arise when quantifying the impact of measures that operate by changing prices, or perceived opportunity costs, as a commute benefits option does.

3.3. Issues for Education and Outreach and Transit Pass Commuter Choice Programs

This subsection summarizes specific issues addressed in the VMEP Guidance that may be relevant to an education and outreach or transit pass Commuter Choice program.

3.3.1. Enforceability and Auditing--By definition, education and outreach and transit pass Commuter Choice programs do not force employers or individuals to do anything. However, the VMEP Guidance clarifies that a *state or agency's* obligations with respect to a voluntary program must be enforceable. For example, if an area intends to implement and publicize a coordinated transit pass, it must commit to do so on an enforceable basis in order to be eligible for SIP credit. If individuals or employers do not respond to the transit pass program as expected, the state need not enforce the program against individuals or employers but must remedy any emission reduction shortfall in a timely manner.³⁶

In lieu of more stringent enforcement, the VMEP guidance directs states to actively monitor, evaluate and report on the effectiveness of voluntary measures. To continue with the transit pass example, the state program might include a commitment to annual evaluation of transit pass purchase data, to check: are people buying as many passes as expected? For a Parking Cash Out-type program, the state might examine how the actual number of employers offering a Parking Cash Out option compares to the number estimated; the actual versus estimated value of benefits offered instead of parking; and the

³⁵ Note, for example, that the EIP rule can also be used to take credit for transit pass programs.

³⁶ VMEP Guidance, p. 9.

actual versus estimated change in SOV mode share. The state program would further commit to report to EPA any significant shortfalls from projected emission reductions from the program and either to correct those shortfalls or make other program adjustments to achieve overall SIP objectives in a timely manner. The state or agency should consider, in designing voluntary (or mandatory) measures, how it will gather the data needed to monitor, evaluate, and report on their effectiveness.

3.3.2. Cap on Total Percent Reduction--In addition, the VMEP Guidance establishes a cap on the portion of emission reductions available through VMEP to meet a Clean Air Act standard. In general, no more than 3 percent of emission reductions required to demonstrate (1) progress towards; (2) attainment of; or (3) maintenance of a National Ambient Air Quality Standard may come from VMEP measures, including education and outreach and transit pass Commuter Choice programs.³⁷ The VMEP Guidance notes that EPA will assist areas to use the EIP Rule if they wish to claim more than the 3% cap on any given pollutant from voluntary programs.³⁸

3.3.3. Seasonal or Episodic Measures--Seasonal measures are in effect only during the season in which an area experiences high pollutant concentrations, e.g., summer ozone season. Episodic measures are in effect only during those days in which high pollutant concentrations are projected based on weather conditions, e.g., ozone alert days. The VMEP Guidance states EPA's view that such measures may be approved for SIP reductions under the Clean Air Act in certain cases.³⁹ Voluntary or transit pass Commuter Choice programs may be constructed to provide commute benefits only during these periods. For example, a state might distribute transit passes during the summer ozone season. Or a program might encourage employers to offer cash in-lieu-of-parking spaces during the ozone season.

3.4. Issues for Incentive and Mandatory Commuter Choice Programs

This subsection summarizes certain specific issues addressed in the EIP Rules and Market Mechanisms Guidance that may be of relevance to an incentive or mandatory Commuter Choice program.

3.4.1. Accounting for Emission Reductions Uncertainty--The EIP rules require that states incorporate into their technical analysis explicit adjustments, based on best judgment, for compliance uncertainty and programmatic uncertainty.⁴⁰ Compliance uncertainty is a measure of the likelihood that the program will be implemented and its specific terms followed. Compliance uncertainty may be affected by state or agency enforcement efforts. For example, if a state or agency implements a program requiring

³⁷ VMEP Guidance, p. 6.

³⁸ VMEP Guidance, p. 6.

³⁹ VMEP Guidance, p. 10.

⁴⁰ All of the requirements discussed in this subsection are contained in paragraph III.D.6 of the EIP Rules, FR 16699-16700.

employers to provide cash as an option to free parking, but does not enforce its rules, the effectiveness of that program will be compromised. As is clear in the EIP guidance, EPA believes that incentive-based programs require enforcement. Programmatic uncertainty is a measure of how well the market will respond to the state or agency program. For example, how much a mandatory program to provide cash instead of parking will affect commuting behavior. Incentive-based and mandatory Commuter Choice programs have uncertain emission results, even assuming full compliance with program requirements. States or agencies must project the emission reductions expected from the program based on economic modeling. However, the EIP Rules require that estimates of program effectiveness account for the uncertainty inherent in such modeling. Programmatic uncertainty bounds can be narrower when high-quality local data is available, compared to estimates primarily based on aggregate national or regional data.

3.4.2. Audit Procedures and Reconciliation--The EIP Rules require that states periodically audit programs, report results to EPA, and commit to timely remedies if the programs are not meeting expectations. Audits must be undertaken at least once every three years. For market-response programs such as incentive or mandatory Commuter Choice, the audit procedures must include efforts to reconcile actual emission reductions with those anticipated for the program. Auditing and reconciliation of key parameters should be conducted. Key parameters might include, but not be limited to, the estimated versus actual compliance rate with the state or agency program; the value of benefits offered in lieu of parking; and the change in SOV mode share. Areas should consider, in designing their programs, how they will gather the data needed to perform an audit. The program must include a range of possible actions the area could use in order to redress an emissions reduction shortfall. It must be possible to implement these actions, without revising the SIP, upon specification by the state. For example, a SIP-credited program that granted a state tax credit for employer-provided telecommuting or rideshare benefits might include a provision that allows the state to increase the value of the credit, extend it to other commute benefits, or take other actions if expected emission reductions are not achieved. If the program shortfall does not cause an overall shortfall that threatens CAA deadlines, the state may redress the shortfall by taking less credit for the program.

Any SIP must still comply with all Clean Air Act requirements, (e.g., attainment of ambient air quality standards, Reasonable Further Progress requirements, conformity requirements, and so forth.) It should be noted, also, that the audit and reconciliation requirements described above are no different than those generally imposed by EPA for other creditable SIP measures, such as reformulated gasoline and stationary-source control programs. Routine air program management procedures may be sufficient to meet the auditing and reconciliation requirements.

3.4.3. Use of Program Revenues--Some incentive or mandatory Commuter Choice programs will have the side effect of increasing net tax revenues. In general, there

is no constraint on the use of such revenues.⁴¹ As noted its Market Mechanisms Guidance, EPA believes that reinvestment of some or all of the revenues, e.g., in improved transit service, walking or biking enhancements, or program publicity, strengthens program effectiveness.

3.5. Use of Emission Reductions from Commuter Choice for Clean Air Act Requirements

Emission reductions generated through Commuter Choice programs may be used to meet many Clean Air Act obligations, including SIPs for any criteria pollutant in both non-attainment and maintenance areas. They may be used to meet Reasonable Further Progress (RFP) requirements, baseline determinations, redesignation and maintenance demonstration requirements.^{42,45} However, the use of emission reductions generated by Commuter Choice programs is restricted through a variety of EPA policies and rules based on the requirements of the Act. For example, current policy forbids the use of such credits to replace source-specific Clean Air Act requirements (e.g., Best Available Control Technology (BACT) requirements for stationary sources), or other control measures specifically required by the Act in certain areas (such as motor vehicle inspection and maintenance (I/M) programs).⁴³

⁴¹ The exception is to revenues generated from measures implemented to meet Clean Air Act mandates for market-based transportation control measures under Sections 182(g)(3), 182(g)(5), 187(d)(3), and 187(g) of the Clean Air Act. The Act (section 182(g)(4)(b) restricts the use of revenues generated through such measures. Revenues may be used to provide incentives for emission reduction, to assist in the development of clean technologies, or to fund administrative costs of State Clean Air Act programs. Unless Commuter Choice programs are used to fulfill the requirements of the above sections in areas subject to those requirements, EPA does not believe that program revenues would be restricted by Section 182 (g)(4)(b).

⁴² However, areas that are required to submit a mandatory TCM SIP under Section 182 (d) (1) (A) of the Clean Air Act could not use voluntary TCM measures, under the auspices of the VMEP, to meet those TCM requirements. Areas subject to these provisions may, in addition to incorporating specific mandatory TCMs to comply with Section 182 (d) (1) (A) requirements, use voluntary TCMs under VMEP in the same or another SIP for other purposes of the Act. Areas that are covered by Section 182 (d) (1) (A) requirements include all severe ozone areas, serious CO areas, and Denver, Colorado.

⁴³ For a more complete discussion, see paragraph III.D.2 of the EIP Rules. 59FR16695.

Appendix 1: Blueprint for a Voluntary Commuter Choice Program

Why Undertake Voluntary Measures? Most emission control measures in SIPs are mandatory, such as regulations that impose strict limits on vehicle and industrial emissions, and permitting requirements for new or modified sources. In fact, some states and local communities have already adopted regulations or ordinances requiring certain employers to reduce employee commuting in single-occupancy vehicles. In the last few years, EPA has recognized that voluntary measures, as long as their benefits can be reasonably assured and quantified, also have a place in SIPs. Voluntary measures can help provide additional emissions reductions that cannot be mandated due to technical, cost, or political constraints. Voluntary plans are most effective where private firms or government agencies, and their employees, can benefit individually. Reducing employees' reliance on commuting in personal vehicles is one of the areas identified by EPA as most promising for voluntary measures. The individual benefits from voluntary programs to reduce emissions from commute vehicles include the following:

- For state and local agencies: Emission reduction credits that can be officially recognized by EPA for the purpose of meeting the state's SIP obligations; elimination of the need to adopt or mandate alternative measures that may be more costly, difficult, or unpopular.
- For private and government employers: An incentive to attract new employees and retain existing personnel; a means to control or reduce seemingly ever-expanding employee parking requirements, especially where the company or agency is growing; cost saving using the new pre-tax option for transit and vanpooling; generation of marketable business "Good Will" from company- or agency-sponsored participation and leadership in achieving clean air objectives; generation of Mobile Source Reduction Credits (MSRCs) that can be banked, traded, or sold (where permissible) under state or local regulations; generation of emission reduction credits that can be applied to meeting a facility emissions cap, or traded to other entities for the same purpose; avoidance of more onerous mandated emission control measures.
- For private and government employees: In certain cases, a way to convert wages or bonuses to tax-free status under Federal and/or state tax laws, or obtain extra compensation to cover commute costs that is not available if a personal vehicle is

used to drive to and from work; a way to simplify one's personal commute, and eliminate the hassle of driving every day in a personal vehicle; a way to meet fellow employees and participate more in the activities of the firm or agency; a sense of personal satisfaction in contributing to the improvement of air quality.

What Employers Need To Do. Employers who wish to participate in a voluntary commute reduction program should take the following steps:

- Contact their state or local air pollution control agency for information about any requirements imposed or recommended by those entities, and about the availability of any funding, recommended strategies, or other support.
- Draw up a concise plan for their organization that includes the types of alternative commute modes available under the program and a list of the benefits to employees who participate (please refer to *Appendix 2* for an outline of possible clean commute strategies), and identify a means for advertising and promoting the plan to all employees. Involvement of top management is highly preferable, both in promoting the program and as participants.
- Identify a manager or committee to administer the program and respond to employee inquiries, and to serve as liaison with the local or state agency.
- Cooperate in providing information about their program at least annually so that the company or agency can take advantage of any emission reduction credits or other benefits generated under the program. *Appendix 3* is a brief information form that should be filled out by the program manager annually, and then provided to the relevant air pollution control agency so that program effectiveness can be monitored.

Role of State and Local Air Pollution Control Agencies or Public/Private

Partnerships. The relevant air pollution control agency or implementing organization must identify, quantify the benefits of, administer, and audit voluntary commute reduction programs in its area just as it would any other SIP measure. EPA cannot give credit to voluntary measures that do not meet Clean Air Act requirements as set forth in its guidance documents. Following are the principal agency responsibilities:

- Develop and implement a program for promoting alternatives to personal vehicle commuting for employers. The program can be carried out by a private or non-profit organization as long as the program is coordinated with the State and Local Agency. Elements of the program should include the identification of specific emission reduction goals; the level of community-wide participation that would be meaningful for SIP or emissions trading purposes; and dissemination of letters and other forms of communication to companies, business associations, and government agencies asking for their participation.
- Provide technical and administrative support to employers who participate either directly or through the support of the implementing organization.

- Where SIP credit is sought, obtain and provide to EPA the information needed to quantify and confirm the emission reductions allocated to the program, as set forth in the Check List in *Appendix 4*.
- Similarly administer and audit the performance of programs used for MSRCs or compliance with emission caps.

Appendix 2: Alternatives to Commuting by Personal Vehicle and The Associated Benefits of Those Alternatives

Listed below are a number of possible strategies and the associated benefits that employers can include in their Clean Air Commute programs. Generally, the strategies involve getting employees to switch from driving to and from work in personal vehicles, particularly single occupancy vehicles (SOVs), to some other form of less-polluting commute. In consultation with the relevant state or local air pollution control agency, employers should choose those strategies that best suit their particular situation.

- Tax-free Transit Passes - Providing mass-transit passes or vouchers for work commute is eligible for treatment as a *tax-free fringe benefit* to employees under IRS Code sec. 132(f), up to a maximum value of \$65/month in 1998 (cap is adjusted annually for inflation after 1999). Passes or vouchers may be provided out of regular wages, or as a tax free bonus.
- Tax-free Commute Highway Vehicles - Also as a *tax-free fringe benefit*, employers may provide tax-free options for employees to ride to and from work on “commute highway vehicles” (i.e., vans or buses with places for seven or more riders, including the driver), up to a maximum of \$65/month, out of regular wages or as a tax free bonus in addition to existing salary.
- Taxable Direct Payments to Employees for Commute Alternatives - Employers can offer direct cash payments, transportation allowance, or incentives, on top of regular wages, to employees who agree to use other forms of clean commuting, such as carpools, bicycling, and walking, that are not listed as tax-free fringe benefits under the tax code. Supplemental taxable payments can also be offered to commuters who use transit or commute highway vehicles, in excess of the IRS-allowed monthly cap, to provide a stronger incentive. Payments of these types are not excludable fringe benefits under the Federal tax code, but should still be considered for inclusion in the program. Even without special tax treatment, these other types of clean commute can benefit employees by offering a *more pleasant mode of commuting*. Employers can benefit as well; offering these other alternatives would be especially useful for employers who want to *reduce the cost*

of off-site parking provided to employees, or *avoid costly expansion of existing parking facilities*. These alternatives may be subject to *favorable treatment under state income tax*. Examples of these types of payments are as follows:

- ☆ A monthly cash payment of \$75 to employees who use a carpool;
- ☆ A monthly cash payment of \$100 to employees who agree not to use company-provided parking; or
- ☆ A supplemental, taxable payment of \$25 per month to transit riders, on top of the \$65 tax-free portion of their wages paid out to cover transit costs or on top of the \$65 per month pass given in addition to wages.

Another way to set up supplemental payments is to scale them according to their effectiveness in reducing emissions. For example, bicycling and walking could receive the greatest amount, followed by mass transit, then carpools.

- Support for Telecommuters - Where it fits into business objectives, telecommuting (even if it does not occur every day of the week) is a highly effective alternative to driving to and from work. Employers can support telecommuting by providing employees with a *computer/communications system for home use* that is compatible with and ties directly into the company or agency system, at no cost to the employee. If the employer retains ownership of the system, there should be no taxable income to the employee.
- Charge for Parking - Employers who own or lease free parking and provide it free to employees can impose a fee that fully or partially recovers the actual cost of the parking. This would allow clean commute participants to benefit from *avoidance of parking fees*. Alternatively, employers can decline to take the steps needed to allow employees to exclude parking benefits from taxable income, while doing so only for commute alternatives, thus giving the alternatives a *favored tax status* within the company or agency. To avoid inequities, commute alternatives under this approach should be available for most, if not all, employees.
- Special Accommodations for Participants - Where consistent with business prerogatives, employees who participate in a clean commute program can be granted *personal accommodations* such as flexible hours; 4/40 work-weeks; secure bike storage facilities; showers for bicyclists and walkers; accurate and regularly updated carpool/vanpool information; free participation (or reduced fees) for employees who organize a new carpool or vanpool, or who volunteer to drive a group commute vehicle or carpool, etc.
- Special Recognition for Participants - Experience with commute alternatives during the energy crisis era in the late 70s and early 80s indicates that establishing *group spirit and recognition* is highly effective in expanding and maintaining alternative commute programs. Employers should select features that fit their own company or agency culture. Examples include an annual picnic or dinner, a

private dinner session with top management, special symbols for office doors or desks, outside speakers, trips to special events or points of interest, etc.

Appendix 3: Example Employer's Annual Program Information Form

(To Be Provided to Relevant Air Pollution Control Agency)

1. At the time just prior to institution of the Commuter Choice program:

- Total number of employees: A .
- Total number of employee vehicles driven to work: B .
- Total number of employee single-occupancy vehicles driven to work: C .
- Number of employees commuting in multiple-occupancy vehicles (B minus C): D .
 - Number commuting 2 per vehicle: D2 .
 - Number commuting 3 per vehicle: D3 .
 - Number commuting 4 per vehicle: D4 .
 - Number commuting 5 per vehicle: D5 .
 - Number commuting in a "commuter highway vehicle" (vanpool): D6 .
 - Number commuting by mass transit: D7 .
 - Number commuting by bicycle or walking: D8 .
 - Total number of employee days/year telecommuting: D9 .
 - Total number of employee days/year not commuting under 4/40 program: D10 .
- Ratio of multiple- to single-occupancy vehicles ($D \div C$): E .
- Ratio of multiple-occupancy vehicles to number of employees ($D \div A$): F .

2. At the time of this report:

- Total number of employees: G .
- Total number of employee vehicles driven to work: H .
- Total number of employee single-occupancy vehicles driven to work: I .
- Number of employees commuting in multiple-occupancy vehicles (H minus I): J .
 - Number commuting 2 per vehicle: J2 .

Number commuting 3 per vehicle: J3 .
 Number commuting 4 per vehicle: J4 .
 Number commuting 5 per vehicle: J5 .
 Number commuting in a "commuter highway vehicle": J6 .
 Number commuting by mass transit: J7 .
 Number commuting by bicycle or walking: J8 .
 Total number of employee days/year telecommuting: J9 .
 Total number of employee days/year not commuting under 4/40 program:
 J10 .

- Ratio of multiple- to single-occupancy vehicles ($J \div I$): K .
- Ratio of multiple-occupancy vehicles to number of employees ($J \div G$):
 L .

3. Does the company own or lease parking for its employees? . What fee or charge, if any, is there for parking? .

4. Are there any reasonably firm plans to relocate the business or employees to another site in the same general commute area? .

5. Are there local zoning restrictions on parking in the general vicinity of your work site? . Any parking meters? .

6. General price for commercial land in the vicinity of the worksite: \$/ac .

7. General vacancy rate of commercial buildings in the vicinity of the worksite:
 % .

8. Value of off-street parking in the vicinity of the worksite: \$.

9. Value of incentives in the program:

- Total wages excluded from employee W2s for transit riders: \$.
- Total wages excluded from employee W2s for commute highway vehicle riders:
 \$.
- Total bonuses/wage supplements excluded from employee W2s for transit riders:
 \$.
- Total bonuses/wage supplements excluded from employee W2s for commute highway vehicle riders: \$.
- Total tax exclusions, if any, under state income tax for all Clean Commute alternatives: \$.
- Before-tax value of all wage-related incentives for all types of Clean Commute alternatives:
 Transit: \$.
 Commuter highway vehicles: \$.
 Carpools: \$.
 Payments for not using company/agency parking: \$.

Telecommuting: _____\$_____.

4/40 Workweek: _____\$_____.

Computer or communications equipment and/or services for
telecommuters: _____\$_____.

Facilities or equipment for bicyclists or walkers (e.g., showers, bike stalls,
walking shoes): _____\$_____.

Program emoluments (e.g., special events, trips, entertainment):
_____ \$_____.

Other incentives (list type and amount): _____

TOTAL: _____\$_____.

Program administration: _____\$_____.

- Total value of any free parking benefits given to employees: _____\$_____.

Appendix 4: Air Pollution Control Agency Check List for Obtaining SIP Credit for Voluntary Alternative Commute Programs

Under EPA guidance, voluntary programs are subject to the same requirements as mandatory programs. The relevant agency must assemble the following information (as estimates for new programs and as actual survey data for annual audits thereafter). EPA has prepared an “Employer’s Annual Program Information Report” that outlines the types of information that will typically be needed.

1. Quantification of emission reductions.

- Determine potentially affected population of vehicles driven to work by employees of all participating companies and agencies. Use survey data, or preferably, actual data from participating companies and agencies.
- Determine population of vehicles participating in the programs, along with type or mode of alternative commute. Again, survey data is acceptable, but actual participant data is preferable.
- Determine program effectiveness as the number of private commute vehicles displaced by alternative commute forms. This can be done by using accepted elasticity factors, or preferably, by combining actual data from participating companies and agencies.
- Develop a “fluidity” factor, if actual program data are not exclusively used, to adjust the program based on such matters as ease of employees’ ability to switch to alternative commute forms, availability of free parking, local zoning requirements, growth of employment, opportunities for expansion and relocating, etc.
- Apply “uncertainty” factors (error bounds), if actual participant data are not being used, to adjust for programmatic and compliance uncertainty, using techniques in planning literature. Information such as the value and scope of program incentives is useful in developing these factors.
- Estimate actual emissions reductions using an EPA-approved model (MOBILE in 49 states, EMFAC in California), and the reduced number of vehicles used for commuting as a result of the program.

2. Legally binding, enforceable commitment by the agency.

Voluntary Clean Commute programs obviously do not require participation by any employer, but the responsible agency must make an enforceable commitment at the state level, through the adoption of regulations governing the program and/or a binding appropriation of funds. If regulations are adopted, it is critical that they not be burdensome or restrictive, or they may act as a deterrent to participation.

3. Permanent nature of emission reductions.

The agency must commit to emission reductions from the program for at least the time period they are relied upon in the SIP.

4. Surplus nature of emission reductions.

The emissions reductions from Clean Commute programs must be in addition to those already in the SIP or baseline inventories.

5. Adequate personnel and other program resources.

The agency submittal must demonstrate a commitment of persons and funding sufficient to provide needed support to program participants; this is especially important for voluntary programs, where participants cannot be expected to tolerate heavy administrative burdens.

6. Timetables and Schedules.

Emission reductions should be projected to account for program start-up, expansion, and possible future economic and employment growth in the area.

7. Monitoring, evaluation, and reporting.

Auditing of the actual-vs-predicted performance is required for voluntary programs, just as for mandated programs, and must be performed on at least an annual basis. The emissions reductions estimate for the program must be adjusted annually based on audit information. EPA must be given an annual report. If performance is significantly different than projected, SIP credits must be adjusted appropriately, or other measures implemented.

Appendix 5: Commuter Benefits in Federal Tax Law and How the Benefits Are Offered

Note: The following summary is for informational purposes only. Taxpayers should consult the Internal Revenue Service or tax professionals for specific guidance on matters related to Federal tax law including compliance with tax codes and filing requirements, especially as they relate to your particular industry and jurisdiction (state).

The Transportation Equity Act for the 21st Century (TEA 21), signed into law on June 9, 1998, amended the Federal tax code, Internal Revenue Code Section 132(f),⁴⁴ as it relates to the entire spectrum of commuting benefits, and has significantly improved the environment for employer sponsored commute incentive programs. As a result, employers are now able to offer employees more flexible programs, known as Commuter Choice programs. Commuter Choice programs incorporate a range of transportation benefits, many on a pre-tax basis, which allow for a more equitable treatment of employees with diverse commuting patterns.

The “Commuter Choice” provisions (TEA 21, Title IX, Section 9010), effective January 1, 1998, allow employers to let their employees set aside up to \$65 a month (\$780 a year) of their salary before taxes to pay for transit and vanpool commuting, and qualified parking expenses up to \$175 a month (\$2,100 a year).⁴⁵ Employers can exclude qualified transportation fringe benefits from the gross income of employees, up to these limits.

TEA 21 also amends the tax law to allow qualified parking to be “cashed out” without penalty. This option provides an additional financial incentive for employees to use commute alternatives. Under parking cash out, an employer may offer employees an option to give up their parking and receive the value as taxable cash, a tax-free fringe benefit for transit or vanpools, or a combination of taxable cash and a tax free fringe benefit. Parking Cash Out provides an incentive for employees to try other commute alternatives. Thus, even in the case where an employee wants to receive the cash option and pay taxes, they can benefit by forming a carpool with other employees and share the

⁴⁴ Federal tax law related to commute benefits is contained in Section 132(f) of the Internal Revenue Code, which is Title 26 of the United States Code. Federal laws (relating to Federal income and other taxes) are generally incorporated by reference into State law (relating to State taxes). The changes discussed here will generally have similar impacts with respect to State and local income taxes where these exist.

⁴⁵ The dollar limits on all of the commute benefits are indexed to inflation. They will rise over time in proportion to cost of living indicators.

cash received from cashing in the parking spots of all but one of the carpoolers who participate.

These changes in the Federal tax law offer important tax advantages to employers who provide employees with a choice of commute benefits:¹ employers may provide commute benefits with *pre-tax* dollars. Employers do not pay Federal payroll taxes (e.g. FICA, medicare, unemployment insurance) on the value of these benefits, and the benefits are not taxed as income to the employee for Federal income tax purposes.

The new law effectively allows an employer to add commute choice benefits without giving up tax-exempt parking benefits. In other words, *employers can finance commute choices with money already being spent* on compensation and benefits. Employers who presently spend money to provide tax-exempt parking can now offer employees the additional choices of taxable cash or tax-exempt (up to the dollar limits described above) transit or vanpool services. Employers can offer the specified benefits for their employees' work commutes Federal tax-free *in addition to* or *in lieu of* compensation up to these Federal limits:

- Up to \$175 monthly for parking at or near work site and transit facilities
- Up to \$65 monthly for public transit
- Up to \$65 monthly for vanpool services

(For transit and vanpooling, this amount will increase to \$100/month for taxable years beginning after December 31, 2001.)

Note: Tax breaks on benefits only apply directly to transit, vanpool and parking benefits. It is important to understand that the more options that are available, the more employees will utilize the benefit, and the more tax savings will be realized by the company. Additionally, companies should understand that the cash option from Parking Cash Out and other monetary incentives (e.g., transportation subsidies excluding subsidized parking, transit, vanpools) are taxable for that employee. Further, the company must pay payroll taxes for that employee related to the cashed out parking spot. Subsidized parking and other transportation benefits do not become taxable if an employer offers them along with the parking cash out option. Although the tax laws do not specifically relate to benefits like telecommuting, carpooling, biking, walking, and other commute options, employers can always offer or encourage these choices. One way to provide an incentive for these options is through Parking Cash Out, where an employee can choose the cash benefit and commute by these alternative modes.

Three Ways to Offer Commute Benefits:

1. Additional Benefit / In Addition to Compensation

An employee may receive the benefit *in addition to* their current wages. Specifically, they can receive transit, vanpool, and parking benefits *completely free of all U.S. payroll and Federal income taxes* up to specified limits. The employer pays for the benefit and receives a deduction from his Federal business income taxes for the value of the benefit. Neither the employer nor employee pays payroll taxes or other related payroll costs on the benefit.

2. Pre-Tax Benefit

An employer may permit employees to *set aside some of their income, before Federal taxes*, to pay for qualified commutes. Employees may use this pre-tax income to pay for transit, vanpools, or parking. Employees would not pay Federal income taxes or payroll taxes on the amount they elect to set aside for the commute option, and employers would not pay U.S. payroll taxes since the amount is treated as a benefit rather than as taxable salary.

3. Cost Sharing

An employer may *share the cost of commuting* to and from work with their employees. They could do this through a combination of numbers (1) and (2) above.

Appendix 6: EPA Contact People

Region 1

Region 1 covers programs in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Please contact Jeff Butensky for assistance with Commuter Choice Programs in EPA's Region 1.

Jeff Butensky
Air Quality Planning Unit
Office of Ecosystem Protection
JFK Federal Building
Boston, MA 02203
Phone: (617) 565-3583
Fax: (617) 565-4940
Email: butensky.jeff@epamail.epa.gov

Region 2

Region 2 covers programs in New Jersey, New York, Puerto Rico, and the US Virgin Islands. Please contact Linda Kareff for assistance with Commuter Choice Programs in EPA's Region 2.

Linda Kareff
Air Programs Branch
Environmental Planning and Protection Division
290 Broadway, 25th Floor
New York, NY 10007-1866
Phone: 212-637-3741
Fax: 212-637-3901
Email: kareff.linda@epamail.epa.gov
Air Program Main Phone: 212-637-4249

Region 3*

Region 3 covers programs in Delaware, the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia. Please contact Paul Wentworth or Larry Budney for assistance with Commuter Choice Programs in EPA's Region 3.

Paul T. Wentworth / Larry Budney
Energy, Radiation, and Indoor Environment Division
841 Chestnut Street
Philadelphia, PA 19107
Phone (Wentworth): 215-566-2183 Phone (Budney): 215-566-2184
Fax (Wentworth): 215-566-2124 Fax (Budney): 215-566-2134
Email: wentworth.paul@epamail.epa.gov
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Main phone number: 215-566-2100

*This information will change in June, 1998, because of office relocation.

Region 4

Region 4 covers programs in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. Please contact Alan Powell for assistance with Commuter Choice Programs in EPA's Region 4.

Alan Powell
Pesticides and Toxics Management Division
Regulatory Planning Section
61 Forsyth St., SW
Atlanta, Georgia 30303
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Pesticides Division Main Phone: 404/562-9077

Region 5

Region 5 covers programs in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Please contact Patricia Morris for assistance with Commuter Choice Programs in EPA's Region 5.

Patricia Morris
Air and Radiation Division
77 W. Jackson Blvd.
Chicago, IL 60604-3590
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Fax: (312) 886-5824
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Main Phone Number: (312) 353-2211

Region 6

Region 6 covers programs in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Please contact John Behnam for assistance with Commuter Choice Programs in EPA's Region 6.

John Behnam
Air Planning Section (6PDL)
Multimedia Planning and Permitting Division
1445 Ross Avenue
Dallas, Texas 75202
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Fax: (214) 665-7263
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Region 7

Region 7 covers programs in Iowa, Kansas, Missouri, and Nebraska. Please contact Christopher Hess for assistance with Commuter Choice Programs in EPA's Region 7.

Christopher D. Hess
Air Planning and Development Branch
Air, RCRA and Toxics Division
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Phone: (913) 551-7213
Fax: (913) 551-7844
hess.christopher@epamail.epa.gov
Main Phone Number: (913) 551-7020

Region 8

Region 8 covers programs in Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. Please contact Jeff Houk for assistance with Commuter Choice Programs in EPA's Region 8.

Jeff Houk
Air Program
999 18th Street, Suite 500 (mail code 8P2-A)
Denver, Colorado 80202
Phone: (303) 312-6446
Fax: (303) 312-6064
Email: houk.jeff@epamail.epa.gov

Air Program Main Phone: (303) 312-6470

Region 9

Region 9 covers programs in Arizona, California, Hawaii, Nevada, American Samoa, and Guam.. Please contact Mark Brucker for assistance with Commuter Choice Programs in EPA's Region 9.

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Air Division
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Air Division Main Phone: 415.744.1264

Region 10

Region 10 covers programs in Alaska, Idaho, Oregon, and Washington Please contact Charlie Donovan for assistance with Commuter Choice Programs in EPA's Region 10.

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U.S. EPA, OAQ-107
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EPA Headquarters

EPA headquarters assists the Regions with policy and technical assistance. Please contact Deanne Upson for assistance with Commuter Choice Programs in any area.

Office of Air and Radiation
Office of Mobile Sources
National Vehicle and Fuel Emissions Laboratory
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- Guidance on Incorporating Voluntary Mobile Source Emissions Reduction Programs in State Implementation Plans*, released on October 24, 1997. Contact: Michael Ball(313-741-7897) ball.michael@epamail.epa.gov
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